

## ABSTRACT

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Radiotherapy for the treatment of optic nerve sheath meningioma: A systematic review and meta-analysis.

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**OBJECTIVES:** The management of Optic Nerve Sheath Meningiomas (ONSM) has suffered a significant shift due to new radiation techniques. However, there is no conclusive information on which approach presents better results in the literature. This meta-analysis aims to evaluate the outcomes of different radiotherapy (RT) modalities in the management of ONSM.

**METHODS:** A systematic review based on an electronic search was performed in MEDLINE, EMBASE, Cochrane, and Lilacs databases. Eligible studies included patients with ONSM treated with RT. Two reviewers independently assessed the eligibility of potential studies, extracted data, and performed the meta-analysis. Outcomes of interest were tumor control, visual acuity (VA), visual field, and complications.

**RESULTS:** Thirty-nine non-comparative studies involving 736 eyes with ONSM treated with RT were included. Six different techniques were studied: 2-dimensional RT (2DRT), 3D-conformal RT (3CRT), Stereotactic Fractionation RT (SFRT), stereotactic radiosurgery (SRS), intensity-modulated RT (IMRT), and proton beam therapy (PBT). With a mean follow-up period of 46 months, tumor control was 97,4% (95% CI: 98-100%). No difference was observed regarding the rate of final VA post-treatment among the modalities. The 3CRT showed substantially higher rates of complication than other techniques.

**CONCLUSIONS:** RT produces remarkable tumor control. New radiation modalities such as SFRT, IMRT, SRS, and PBT resulted in better therapeutic results with fewer complications than 2DRT and 3CRT. Thus, they should be the preferential choices for treating ONSM regardless of initial clinical presentation.

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